# Report Documentation Page

*Form Approved*
*OMB No. 0704-0188*

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

| 1. REPORT DATE | 2. REPORT TYPE | 3. DATES COVERED |
|---|---|---|
| **31 OCT 2014** | | **00-00-2014 to 00-00-2014** |

| 4. TITLE AND SUBTITLE | 5a. CONTRACT NUMBER |
|---|---|
| **Inlet Engineering Toolbox** | 5b. GRANT NUMBER |
| | 5c. PROGRAM ELEMENT NUMBER |
| 6. AUTHOR(S) | 5d. PROJECT NUMBER |
| | 5e. TASK NUMBER |
| | 5f. WORK UNIT NUMBER |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **U.S. Army Engineer Research and Development Center,CIRP - The Coastal Inlets Research Program,3909 Halls Ferry Road,Vicksburg,MS,39180** | 8. PERFORMING ORGANIZATION REPORT NUMBER |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) | 10. SPONSOR/MONITOR'S ACRONYM(S) |
| | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) |

12. DISTRIBUTION/AVAILABILITY STATEMENT
**Approved for public release; distribution unlimited**

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT | 18. NUMBER OF PAGES | 19a. NAME OF RESPONSIBLE PERSON |
|---|---|---|---|---|---|
| a. REPORT **unclassified** | b. ABSTRACT **unclassified** | c. THIS PAGE **unclassified** | **Same as Report (SAR)** | **2** | |

US Army Corps of Engineers®
Engineer Research and Development Center

## Coastal Inlets Research Program

# Inlet Engineering Toolbox

**Description**

The Inlet Engineering Toolbox (IET) Work Unit develops desktop PC and web-based tools to aid in studies of the consequences of engineering actions at coastal inlets and adjacent beaches.

**Issue Addressed**

District scientists and engineers need rapid-assessment tools to make decisions and visualize regional sediment transport and coastal process information over regional spatial scales. The tools and models were developed for desktop PC and web-based use, so that District scientists and engineers can complete projects in-house rather than requiring a technical expert to do the work on a high-speed computer.

**Products**

The primary product of the IET W.U. is GenCade, a one-line shoreline change and sand transport model. GenCade is run in the Surface-water Modeling System (SMS) version 11.1 or higher. Another product is the Sediment Budget Analysis System (SBAS) which was developed for PC use and has been expanded to ArcGIS by the Regional Sediment Management (RSM) Program. An improved version of the SBAS in ArcGIS is underway and is scheduled for completion in FY15 by the RSM Program. GenCade's longshore transport and shoreline change outputs can be used to develop a sediment budget, so an automated approach of pulling GenCade results into SBAS will be completed in early FY15. Other activities ongoing in the work unit include methods to assess the

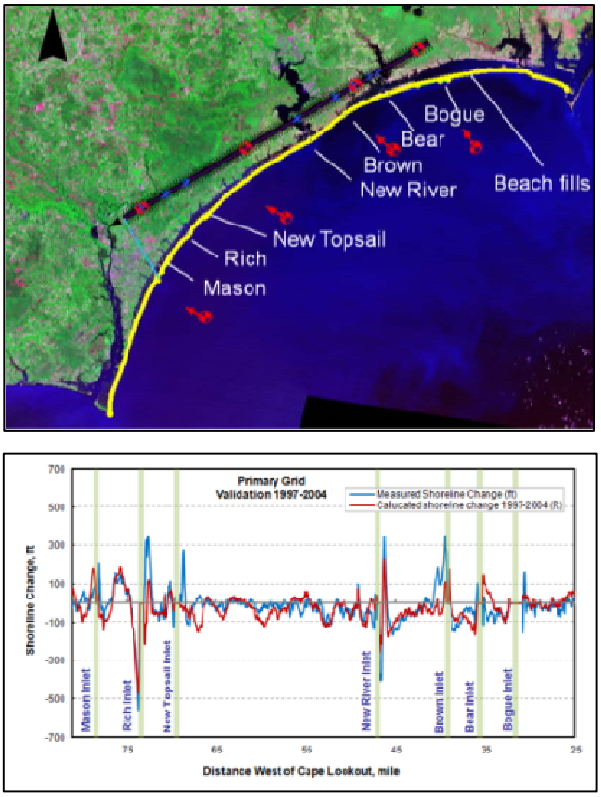


Figure 1. GenCade application at Onslow Bay, NC.

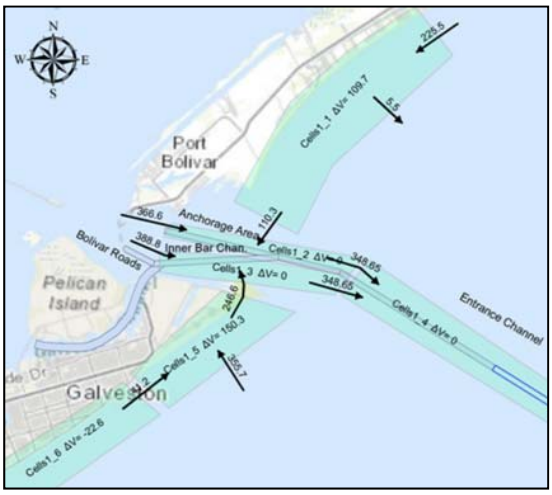


Figure 2. Sediment budget in SBAS, Galveston, TX.

resiliency of coastal dune systems, whether natural or built systems, and an improved long shore sand transport formula. Tools previously developed under the IET W.U. include the Shoaling Toolbox, the Inlet Reservoir Model, and the Sediment Budget Calculator.

**Application of Products**

GenCade has been applied to Onslow Bay, North Carolina; St. Augustine, Florida; Long Island, New York; and several locations along the Texas coast. Recent SBAS applications include Galveston Island, Texas; the Lake Erie shoreline; and Saco Bay, Maine.

**Projected Benefits**

Tools developed by the IET W.U. aid Districts in the understanding of inlets and adjacent beaches, and streamline analyses.

**Documentation**

The primary forms of GenCade documentation are through multiple technical reports which describe model theory and include examples and a user's guide and the CIRP Wiki. Archived webinars and videos are also available for users interested in following a sample GenCade simulation. A user's guide for SBAS is available on the CIRP and RSM websites.

**Points of Contact**

Ashley E. Frey, Ashley.E.Frey@usace.army.mil

**CIRP Website**

- Please see the CIRP website to download documentation: http://www.erdc.usace.army.mil/Missions/WaterResources/CIRP/Publications.aspx
- View archived webinars: http://www.erdc.usace.army.mil/Missions/WaterResources/CIRP/TechTransfer.aspx
- Review guidance documented on the CIRP wiki: http://cirpwiki.info/wiki/Main_Page.